

## Alg. 2 Warm Up #1-4

## Thursday space

1. Factor:

a)  $x^2 + 3x + 2$

b)  $x^2 - 7x - 18$

c)  $x^2 + 6x$

2. Use the zero product property to solve:

a)  $x^2 + 3x + 2 = 0$

b)  $x^2 - 7x - 18 = 0$

c)  $x^2 + 6x = 0$

## HW Questions:

1-4. "Find  $f(3)$ " means to find the output of function  $f(x)$  for an input of  $x = 3$ . For the function  $f(x) = \frac{1}{x-2}$ , find each of the following values.

a. Find  $f(4)$ . (This means find the output of the function when  $x = 4$ .)

b. Find  $x$  when  $f(x) = 1$ . (This means find the input that gives an output of 1.)

$\frac{(x-2)}{1} \cdot \frac{1}{x-2} = 1(x-2)$   
 $1 = x - 2$   
 $x = 3$

1-5. Angelica is working with function machines. She has the two machines  $g(x) = \sqrt{x-5}$  and  $h(x) = x^2 - 6$ . She wants to put them in order so that the output of the first machine becomes the input of the second. She wants to use a beginning input of 6.

a. In what order must she put the machines to get a final output of 5?

b. Is it possible for her to get a final output of -5? If so, show how she could do that. If not, explain why not.

$$h(6) = 6^2 - 6$$

$$h(6) = 36 - 6$$

$$h(6) = 30$$

← new input →

$$g(30) = \sqrt{30-5}$$

$$g(30) = \sqrt{25}$$

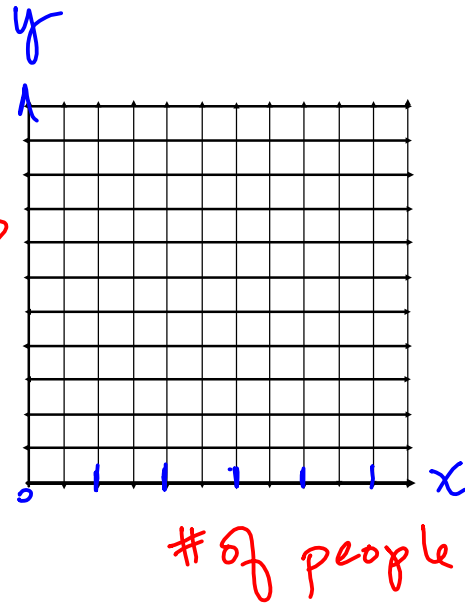
$$g(30) = 5$$

- 1-6. An average school bus holds 45 people. Sketch a graph showing the relationship between the number of students who need bus transportation and the number of buses required. Be sure to label the axes.

# buses

what depends on what?

# buses depends on  
# of people  
dependent variable is y

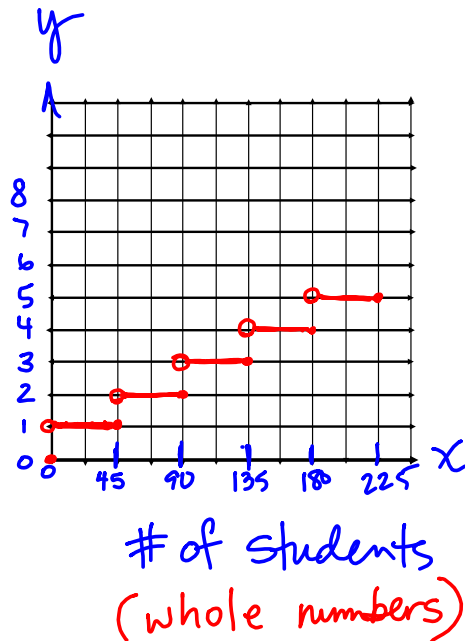


- 1-6. An average school bus holds 45 people. Sketch a graph showing the relationship between the number of students who need bus transportation and the number of buses required. Be sure to label the axes.

# of buses

x	y
0	0
20	1
45	1
46	2
90	2
91	3
135	3
136	4

← jumps here



1-7. In this course, you will learn shortcuts that allow you to sketch many different types of graphs quickly and accurately. However, when the directions ask you to *graph an equation* or to *draw a graph*, this means it is not just a sketch you should do quickly. You need to:

- Use graph paper.
- Label key points.
- Scale your axes appropriately.
- Plot points accurately.

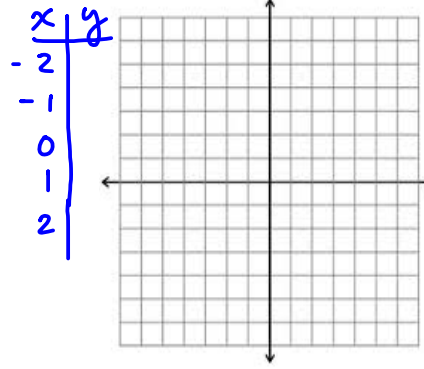
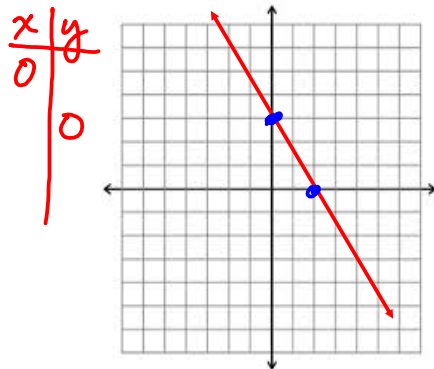
On separate sets of axes, graph each of the following equations. If you do not remember any shortcuts for graphing, you can always make an  $x \rightarrow y$  table.

a.  $y = -2x + 7$

b.  $y = \frac{3}{5}x + 1$

c.  $3x + 2y = 6$

d.  $y = x^2$



1-8. The graph for part (d) of problem 1-7 is different from the other three graphs.

- a. Explain how the graph is different from the other three graphs.
- b. What in the equation of part (d) makes its graph different?
- c. What is the graph of part (d) called? *parabola*

1-9. Write down everything you know about the equation  $y = mx + b$ . You should include what this general equation represents, as well as what each of the different letters represents. Be as thorough as possible.

Resource Manager: collect the homework from your team and turn it in.

Classwork: Resource page 1.1.2B (White)

Investigation Equation to Graph and describe completely.

1.  $y = 3x + 2$

2.  $y = x^2 - 3$

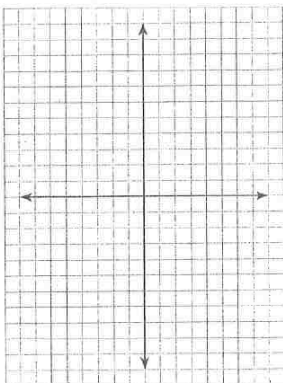
3.  $y = -(x - 1)^2 + 4$

4.  $y = \sqrt{x + 3}$

Alg 2A 1.1.2B Resource pg.

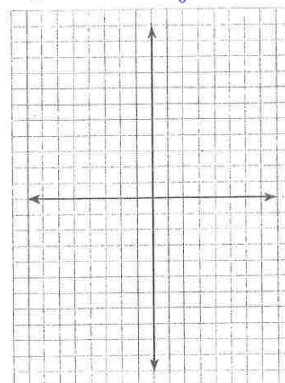
Name \_\_\_\_\_

Per. \_\_\_\_\_ Team # \_\_\_\_\_

Equation:  $y = 3x + 2$ Important  
Points:

Domain:

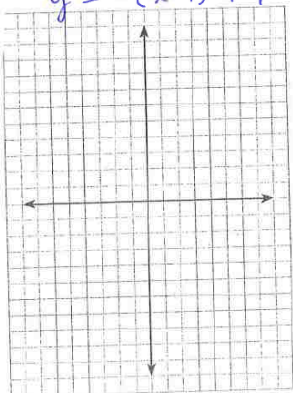
Range:

Equation:  $y = x^2 - 3$ Important  
points:

Domain:

Range:

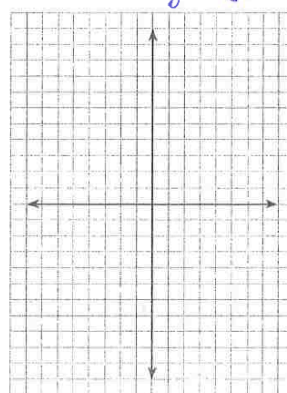
Equation:  
 $y = -(x-1)^2 + 4$



Describe:

x/y

Equation:  
 $y = \sqrt{x+3}$



Describe:

x/y

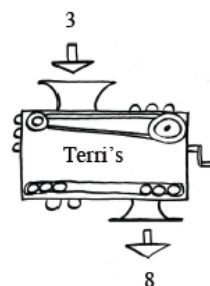
HW: 1-

#12 ---> 18



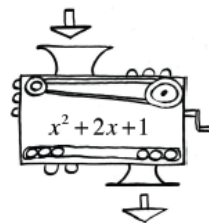
- 1-12. Junior is saving money in his piggy bank. He starts with 10 cents and adds two pennies each day. Create an  $x \rightarrow y$  table and a graph for the function for which  $x$  represents the number of days since Junior started saving money and  $y$  represents the total money he has saved.
- 1-13. Use the Zero Product Property and factoring, when necessary, to solve for  $x$ . The Math Notes box for Lesson 1.1.4 may be useful, if you need help.
- |                    |                     |
|--------------------|---------------------|
| a. $(x+13)(x-7)=0$ | b. $(2x+3)(3x-7)=0$ |
| c. $x(x-3)=0$      | d. $x^2-5x=0$       |
| e. $x^2-2x-35=0$   | f. $3x^2+14x-5=0$   |

- 1-14. Terri's project for the Math Fair was a magnificent black box that she called a function machine. If you put 3 into her machine, the output would be 8. If you put in 10, the output would be 29; and if you put in 20, it would be 59.



- |  |  |
|--|--|
| a. What would her machine do to the input 5? What about $-1$ ? What about $x$ ? Making an input $\rightarrow$ output table may help. |  |
| b. Write an equation for Terri's machine.  |  |
- 1-15. Nafeesa graphed a line with a slope of 5 and a y-intercept of  $(0, -2)$ .
- |                                   |   |
|-----------------------------------|---|
| a. Find an equation for her line. | b. Find the value of $x$ when $y = 0$ . |
|-----------------------------------|---|
- 1-16. In each of the following equations, what is  $y$  when  $x = 2$ ? When  $x = 0$ ? Where would the graph of each equation cross the y-axis?
- |                  |                 |
|------------------|-----------------|
| a. $y = 3x + 15$ | b. $y = 3 - 3x$ |
|------------------|-----------------|

- 1-17. Carmichael made a function machine. The inner workings of the machine are visible in the diagram at right. What will the output be in each of the following cases?



- a. If 3 is dropped in?
  - b. If  $-4$  is dropped in?
  - c. If  $-22.872$  is dropped in?
- 1-18. Does the temperature outside depend on the time of day, or does the time of day depend on the temperature outside? This may seem like a silly question, but to sketch a graph that represents this relationship, you first need to decide which axis will represent which quantity.
- a. When you graph an equation such as  $y = 3x - 5$ , which variable (the  $x$  or the  $y$ ) *depends* on the other? Which is not dependent? (That is, which is *independent*?) Explain.
  - b. Which variable is *dependent*: temperature or time of day? Which variable is *independent*?
  - c. Sketch a graph (with appropriately named axes) that shows the relationship between temperature outside and time of day.